NOTES.

A FAMOUS physician and physiologist has just passed away. We allude to Dr. Brown Séquard, of the Paris Academy of Sciences, whose death occurred on Sunday night. Dr. Séquard was born at Port Louis, Mauritius, in 1817, and was, therefore, seventy-seven years of age at the time of his death.

WE regret to record the death of M. H. C. G. Pouchet, Professor of Comparative Anatomy at the Paris Museum of Natural History, at the age of sixty-one. He became assistant-naturalist and head of the anatomical department of the museum thirty years ago, and in 1870 was appointed to the chair he occupied up to his death. He was the author of numerous works of scientific value, among which may be mentioned his "Traité d'Ostéologie Comparée," published in 1889.

PROF. ROBERTSON SMITH has also passed away at the early age of forty-eight.

THE following deaths have recently occurred abroad:—Dr. W. H. Delffs, Professor of Chemistry in Heidelberg University, Dr. G. A. Weiss, Professor of Botany at Prague, and Dr. F. Ulrich, Professor of Mineralogy and Geology in Hanover Polytechnic.

THE Royal Meteorological Society's fourteenth exhibition o instruments, which will open on Tuesday next in the rooms of the Institution of Civil Engineers, 25 Great George-street, Westminster, will be devoted mostly to instruments, drawings, and photographs relating to the representation and measurement of clouds. The exhibition promises to be a very interesting one, and will include original cloud sketches by Luke Howard, as well as photographs of clouds by the highest authorities in various parts of the world. The exhibition will remain open till the 20th inst.

THE eleventh International Medical Congress was formally opened by the King of Italy on March 29. It is said that the congress includes more than six thousand members. The President, Prof. Baccelli, delivered the inaugural address in Latin, and dwelt on the importance of the "great and solemn festivals of science." Prof. Virchow, speaking as the President of the tenth International Congress, held at Berlin in 1890, expressed the thanks of the members of the eleventh congress for the warmth of the welcome extended to them by the city of Rome and by Italy. The *British Medical Journal*, to whom we are indebted for this information, contains a number of portraits of some of the officers of the congress and readers of addresses, among them being an excellent one of Prof. Michael Foster. Members of the Congress were invited to a garden party in the Quirinal Gardens on Monday, and in this and other ways the King of Italy and the Italian Government have shown their interest in the meeting. Foreign visitors must marvel at the different way things are managed here, where the Royal Family and Government generally ignore them.

INFORMATION has been received, through Reuter's agency, that the members of the International Sanitary Conference met on April 2, at the Ministry for Foreign Affairs in Paris, as a private committee, to collate the different copies of the text of the convention. The instrument was to have been signed on Tuesday by the plenipotentiaries of all the Powers, except the representatives of Turkey. A very complete scheme has been formulated in order to diminish to the utmost any chance of the cholera being conveyed to Europe by means of the Indian pilgrimages to the Hedjaz, and also to improve the unsatisfactory conditions to which pilgrims are exposed in the Red Sea and Arabia, both on the outward and homeward journeys. These changes will involve a complete reorganisation of the sanitary stations now controlled, and the creation of a number of hospitals and refuges at Jedda, Mecca, and elsewhere. With the exception of Turkey, all the countries represented at the congress, including Persia, are unanimous in their decisions.

DR. G. S. TURPIN, of the Storey Institute, Lancaster, has been appointed principal of the Huddersfield Technical School.

PROF. O. MATTIROLO has been appointed Extraordinary Professor of Botany and Director of the Botanic Garden at the University of Bologna.

WE learn from the *Journal of Botany* that the first volume of the *Conspectus Floræ Africæ*, by M. Durand and Dr. Schinz, will shortly appear.

PROF. GUIDO CORA, of the Royal University of Turin, is representing the Société d' Anthropologie de Paris at the International Medical Congress, now being held in Rome.

DR. H. KAYSER, who, with Prof. Runge, has carried out some important spectroscopic researches, has been appointed Professor of Physics at Bonn University, in succession to the late Prof. Hertz.

IT has been decided by the Veterinary Section of the Wurtemberg Academy of Medicine to establish a laboratory for the preparation of vaccines by Pasteur methods. The laboratory will bear Pasteur's name.

THE Rouen Académie des Sciences, Belles-lettres, et Arts, offers a prize of five hundred francs to the author of the best work on a new method of accurately measuring high temperatures, or for the improvement of one of the methods already known.

THE Liverpool Library Science and Arts Committee have received an anonymous offer of £5000 towards the cost of erecting central buildings for the School of Science, Technology, and Arts, on condition that the Corporation subscribe a like amount.

MR. J. JENNER WEIR, the well-known entomologist, died on March 23, in his seventy-second year. He became a Fellow of the Entomological Society fifty years ago, and was also a Fellow of the Linnean, the Zoological, and other Societies. His first paper was contributed to the *Zoologist* in 1845; his last appears in the April number of the *Entomologist*. As an enthusiastic worker, and an acute observer, he was esteemed by all, and by his death natural history suffers a severe loss.

MR. GEORGE PYCROFT died at Torquay a few days ago. He was one of the founders of the Devonshire Association for the Advancement of Science and Art.

MESSRS. BALY AND CHORLEY have devised a high temperature thermometer, the novelty of which consists in the replacement of mercury by the singular liquid alloy of potassium and sodium. The boiling point of this alloy lies somewhere in the neighbourhood of 700°, and its solidifying point is $-8°$, so that between these limits the liquid is particularly suitable for thermometric use. In order not to inconveniently lengthen the thermometer, the graduations are caused to commence at 200°, the bore for this purpose being widened just above the bulb. The space above the alloy is filled with pure nitrogen at such a pressure that when the glass begins to glow, and therefore soften, the interior pressure shall be equal to the atmospheric, and thus any tendency to alteration of volume avoided. The alloy exerts a slight action upon the glass at a red heat, causing a browning, but after the first heating during the preparation of the instrument the action ceases, the stained interior surface resisting further action. It is only necessary to heat the bulb and a small portion of the stem, for the coefficient of expansion of the alloy increases with the temperature in such a manner as to compensate for the error due to the portion not heated. The graduations are thus equidistant, and various points in them are determined by immersion of the lower portion of the instrument in the vapour of high boiling substances whose temperatures of ebullition have been well ascertained. The instrument should be a very useful one for the determination of high boiling points.

The "Hand-Guide to the Royal Botanic Gardens, Péradeniya," prepared by Mr. Henry Trimen, F.R.S., the Director, contains some interesting information. The gardens were opened in 1821, six years after the final occupation of the Kandyan Kingdom by the English. A plan for a proper botanical garden in Ceylon was drawn up by Sir Joseph Banks as far back as 1810, the site chosen being Slave Island, Colombo. Mr. W. Kerr took charge of this establishment in 1812, but he died two years later, and was succeeded by Mr. Alexander Moon. It was during Moon's rule that the gardens were moved to the present site at Péradeniya. Moon was a diligent student of the flora of Ceylon, and published a valuable work upon it, but after his death, in 1825, a succession of more or less unqualified persons were placed in charge. With the appointment in 1844, however, of Mr. George Gardner, the gardens started on the active, independent, and useful existence which they have since maintained. Mr. Gardner died in 1849, and was succeeded by Dr. Thwaites, who kept Péradeniya in a high state of efficiency for more than thirty years, and died at Kandy in 1882, having never left the island since his arrival. The present director has held his position since 1880.

A pamphlet has been published by the observatory of Villa Colon, near Montevideo, containing the results of rainfall observations for the ten years 1883–1892, computed by the Rev. L. Morandi. The mean annual fall is 35·3 inches; the maximum and minimum values for each month show that they varied from 11·7 inches in January 1889 to 0·0 inch in August 1886, whereas the normal values for these months are 3·4 inches and 3·5 inches respectively. The greatest fall in one day was 3·15 inches, on January 26, 1889, while on the 6th of the same month 1·9 inch fell in 2¼ hours. The number of days on which rain fell in the year varied from 68 to 109. The greatest number of consecutive rainy days was 9, and of dry days 38; the greater quantity falls in the early morning. Other tables show the relation between the rainfall, atmospheric pressure, and wind.

An extremely brilliant aurora borealis was observed on March 30. The Hon. Rollo Russell saw the display from Haslemere. In a letter to us, he says:—"A bluish-white illumination, like late twilight, was first noticed in the north-west, and this continued with little variation for about fifteen minutes, namely, from 10.15 to 10.30 p.m. A red streamer then shot up towards the zenith, and was for about half a minute rather well-defined, but afterwards gradually became fainter and broader. A considerable amount of pale white light remained in the north-west at 10.40. When the phenomenon was at its brightest, the stars in its direction ceased to be visible." The following particulars, received from Mr. C. E. Stromeyer, of Glasgow, are of interest:—"Luminous (white) rays were seen to converge from all parts of the horizon towards a common centre, which, as nearly as I could gauge, shifted its position as follows:—At 10.30 p.m., 11h. 30m. N. 50°; at 11 p.m., 10h., N. 40°; at 11.30 p.m. the centre was not well defined, and few rays showed themselves." Mr. Stromeyer remarks that at first the centre was occupied by luminous clouds of an irregular streaky nature, which sometimes took the form of spirals. Occasionally waves of light were also seen passing rapidly along the rays *toward* the centre. Mr. Preece, writing to the *Times*, says the aurora was accompanied, as usual, by very strong earth currents on all telegraph lines. At 10·20, a peculiar noise was heard upon a telephone inserted upon a long Irish wire at Llanfairpwll in Anglesey, and at 2 a.m. on Saturday, March 31, "twangs" were heard, as if a stretched wire had been struck.

We are informed that the fund established by Mrs. Elizabeth Thompson, of Stamford, Connecticut, "for the advancement and prosecution of scientific research in its broadest sense," now amounts to $26,000. As accumulated income will be available in June next, the trustees desire to receive applications for appropriations in aid of scientific work. This endowment is not for the benefit of any one department of science, but it is the intention of the trustees to give the preference to those investigations which cannot otherwise be provided for, which have for their object the advancement of human knowledge or the benefit of mankind in general, rather than to researches directed to the solution of questions of merely local importance. Applications for assistance from this fund, in order to receive consideration, must be accompanied by full information, especially in regard to the following points: (1) Precise amount required; (2) exact nature of the investigation proposed; (3) conditions under which the research is to be prosecuted; (4) manner in which the appropriation asked for is to be expended. All applications should reach the Secretary of the Board of Trustees, Dr. C. S. Minot, Harvard Medical School, Boston, Mass., U.S.A., before June 1. The following grants have been made, in addition to those contained in the list previously noted in these columns (Nature, vol. xlv. p. 91): $300 to Prof. E. Wiedemann, Erlangen, for researches on luminous electric discharges; $200 to Prof. S. Exner, Vienna, for experiments with carrier pigeons; $100 to Prof. K. Kobert, Dorpat, for researches on sphacelinic acid and cornutine; $200 to Prof. A. Béchamp, Paris, for researches on the composition of milk; $200 to Prof. E. Drechsel, Leipzig, for researches on bases derived from albumens.

An ordinary general meeting of the Institution of Mechanical Engineers will be held on Thursday and Friday, April 19 and 20. Prof. A. B. W. Kennedy, F.R.S., will deliver his inaugural address on the former date, after which papers will be read and discussed.

At the twenty-fifth annual meeting of the Norfolk and Norwich Naturalists' Society, held on March 27, Prof. Robert Collett, of Christiania, and Mr. E. T. Newton, F.R.S., were elected honorary members, and Dr. Charles Plowright was appointed president, in succession to Mr. T. Southwell. It was resolved by the meeting that the society be enrolled as a corresponding society of the British Association.

The Worthing correspondent of the *Daily Chronicle* says that an unfavourable report upon the results of the trial of M. Hermite's system of treating sewage matter with electrolysed sea-water (see p. 469) has been prepared by Dr. C. Kelly, medical officer of health of the borough and of the combined sanitary district of West Sussex. The report contains the results of chemical and bacteriological analyses made respectively by Dr. Dupré and Dr. Klein. The results of the various tests are set out in detail, and Dr. Kelly concludes:—"Since there is no instantaneous decomposition of fæcal matter and no sterilisation of sewage, I am of opinion that the process, so far as the late trials have gone, has therefore failed to produce the results which are claimed for it by its inventor." This is the first time M. Hermite's system has been publicly tested in England.

Dr. H. R. Mill and Mr. E. Heawood have made a careful bathymetrical survey of Haweswater, thus completing the soundings necessary for the construction of contoured maps of all the larger lake-basins in England. The greatest depth found was 103 feet, rather less than one-third of the depth which local tradition assigned to the lake. Haweswater presents an interesting example of a long narrow lake which has been nearly separated into two sheets of water by the large delta of a mountain torrent, illustrating a stage in the history of such severed lakes as Buttermere and Crummock, or Derwentwater and Bassenthwaite. The temperature of the mass of water in the lake was, on March 26, 39°·7 F. with a surface temperature of 41°·5 in the deep, and 43° in the shallow parts of the lake.

We have received from the Deutsche Seewarte, part vi. of *Deutsche ueberseeische meteorologische Beobachtungen*, containing observations made at six places in Labrador, one at Walfisch Bay, one at Apia (Samoa), four on the east coast of Africa, and one at Chemulpo (Corea). The stations in Labrador were first established in 1882, and furnished a very important addition to the international polar observations made in that year, as they formed a link between the stations in Canada and West Greenland. The establishment of the other stations is mostly due to the efforts made by Germany to extend her colonial possessions, and to the praiseworthy desire of having scientific observations made wherever her countrymen gain a footing. The result is the publication of a valuable series of observations in remote places, made with good instruments, and upon a uniform plan. The readings are made three times daily, while the state of the weather, &c. is represented by international symbols. We think it would add to the value of the work if each part contained the key to these symbols, as they are probably unknown to many persons into whose hands the volumes fall.

In the last Report of the Meteorological Society of Scotland it was stated that an inquiry had been completed into the diurnal variation of the barometer on Ben Nevis during the days of clear weather on the one hand, and days of fog or mist on the other. The results gave two sets of curves essentially different from each other; and as these suggested important applications to other meteorological inquiries, it was resolved to submit the barometric observations at the Fort-William Observatory to a similar discussion. The same days were selected that were used in the discussion for the top of Ben Nevis. At the general meeting of the Society on March 29, the Council reported that the discussion has been completed, with the highly important result that, just as happens at the top, the hourly diurnal curves for clear and foggy weather respectively are essentially different from each other. The result, broadly stated, is that for clear weather, the diurnal curves are strongly pronounced forms of the curves for dry continental climates about the latitude of Fort-William; and those for foggy or misty days strongly pronounced forms of the curves for wet climates on the coasts in similar latitudes. Further, the combination of these curves for widely different types of weather is identical with the curves calculated from all the observations. This resolution of the Fort-William diurnal barometric curve is new to the science and is of the highest importance.

Mr. A. F. Miller has made a spectroscopic examination of the light emitted by the small luminous beetle, *Photinus corruscus* (*Transactions* of the Astronomical and Physical Society of Toronto). The light emitted appears to be of two different kinds. From the lower part of the insect's abdomen a glow of a pale greenish tint, like that of phosphorus or a phosphorescent substance, was pretty constantly visible. This light gave a faint spectrum consisting of a wide green band situated between λ 5160 and λ 5805 approximately. The second kind of light was emitted in flashes lasting generally about a quarter of a second, though sometimes the insect emitted several in quick succession. The source of this light is in the same region of the abdomen, but the luminous intensity is much greater than in the former case. The flash has a pale green colour, and its spectrum is perfectly continuous through the region it occupies, that is, from about λ 5000 to about λ 6605. The specimens examined did not seem to give any emission of blue or violet light, though there might have been faint radiations in this region imperceptible to the eye through the sudden character of the flash, and the overpowering preponderance of the less refrangible waves. It would be of interest to test the action of both kinds of luminosity upon a photographic plate. Mr. Miller's observations go to show that the whole energy devoted by the insects to light-production is expended in originating those rays which powerfully affect the visual organs. They thus support the conclusion of Prof. S. P. Langley, that nature produces the most economic kind of light.

At a recent meeting of the Académie des Sciences (Paris) M. Lippmann presented a paper by M. N. Piltchikoff, on a new method of studying the electric discharge. This method consists in joining one pole of a Voss electric machine to a metallic point which is held over a layer of castor oil contained in a copper dish, connected to the other pole of the machine. If the point is positively charged a large depression is formed, at the centre of which a secondary depression is seen if the distance between the point and the oil is diminished. If a small screen is placed between the point and the oil, an elevation is produced at the centre of the depression; the shape of this elevation being the same as that of the shadow that would be formed if the electrified point were luminous. The level inside this shadow is the same as that of the unaffected liquid, so that it appears that the screen stops the action and produced an electric shadow. This curious effect is shown in a very striking manner by the employment of mica screens cut into various geometrical forms; in every case the "shadow" formed on the depression was an exact reproduction of the screen. One cannot help being struck with the resemblance of the above experiment to some of those of Prof. Crookes. The same phenomena are produced with the negative discharge. The discharge acts in a very powerful manner, and the phenomena show themselves even when a strong blast of air is caused to play between the point and the oil. Using different gases the author finds that at the ordinary atmospheric pressure the electric shadows are in all cases the same; the only differences obtained were in the secondary depressions which appear when the electrified point is very near the surface of the oil. With very low pressures, however, the shadows are not formed. The author has succeeded in photographing the depressions and the shadows, and has obtained sharp and well-defined negatives with an exposure of about twenty seconds, showing that, at any rate for this length of time, the phenomenon does not change appreciably.

The current number of the *Istituto d'Igiene sperimentale di Roma* contains an exhaustive and very important memoir "Sul veleno del Tetano," by Dr. Fermi and Dr. Pernossi. It covers close upon sixty pages, and records numerous experiments on the behaviour of the toxic soluble products of tetanus cultures under various conditions. Amongst these the action of heat was investigated, and it was ascertained that the tetanus-filtrate diluted with water was deprived of all pathogenic properties when exposed for one hour to 55° C., but when completely desiccated it was still toxic after being exposed for one hour to 120° C. The action of an electric current on its pathogenic properties was also examined, and they were found to be destroyed after exposure for about two hours to a current of about 0·5 amperes. Numerous chemical substances were also investigated. Amongst the gases experimented with, it was found that oxygen, carbonic anhydride and hydrogen produced no appreciable effect even after from ten to fifteen hours' contact.

MESSRS. SAXON AND CO. have published a useful little book, entitled "Everybody's Guide to Gardening," by Mr. H. H. Warner.

DR. THOMAS LYNN'S "Health Resorts of Europe" (Bristol: John Wright and Co.), being a guide to the mineral springs, climates, mountain and sea-side stations of Europe, has reached a second edition.

THE Calendar of the Royal University of Ireland, for the year 1894, has just been published. The papers set at the examinations in 1893 are published in a separate volume, forming a supplement to the Calendar.

THE Botanical Exchange Club of Vienna has issued an extensive list of specimens of rare plants, which it is ready to exchange or sell. Several new species are also described. The list may be obtained from Herr J. Dörfler, of I. Burgring 7, Vienna.

DR. J. W. MOLL, the Director of the Botanic Garden at Gröningen, publishes (in French) a list of forty-two species of Papaveraceæ grown in the Garden, three of which are probably hybrids. Seeds of a large number of the species are offered to other horticulturists.

WE have received the number of the *Journal of the Royal Horticultural Society* for January. Besides extracts from the *Proceedings* of the Society and its committees, it contains reports on the growth of a number of garden plants and vegetables at Chiswick, and papers by specialists on various subjects interesting to horticulturists.

DR. C. V. RILEY, of Washington, has sent us a paper on "Parasitic and Predaceous Insects in applied Entomology," and one entitled "Further Notes on Yucca Insects and Yucca Pollination." The pollination of *Yucca Whipplei* by *Pronuba maculata* is described in detail. In another paper he describes two new species of *Megastismus*, a genus of Chalcididæ which is essentially parasitic, chiefly on gall-making Cynipidæ.

MR. A. E. MUNBY has prepared a pamphlet entitled "Notes on Polarised Light, for Students of Mineralogy," and published by Messrs. Reid, Sons, and Co., Newcastle-on-Tyne. In the twenty-eight pages, of which the pamphlet consists, an elementary description is given of the optical principles utilised in the construction of the polariscope, and of phenomena observable with that instrument used as an adjunct to the microscope. The notes should be of use to elementary students of mineralogy, for they contain clear explanations of the various points connected with the classification of crystals according to their optical symmetry.

SOME years ago Liebig wrote to the Royal Agricultural and Commercial Society of British Guiana: "There cannot be a more beautiful and striking exemplification of the genuine British spirit than the disposition shown by the most distinguished and best-informed men in the remotest parts of the great empire to form themselves into Societies, which have for their object the extension, promotion and application, for the public good, of scientific principles." On March 18, the Society to which these words were addressed attained its jubilee, and in view of this fact a short account of its establishment and work is given in the current number of its excellent journal, *Timehri*. In addition to this description, the journal contains a long paper, in which Mr. Edward F. im Thurn details the incidents of one of his journeys into the far interior of Guiana.

WHEN the Natural History Society of Rugby School was founded in 1867 it was laid down that the objects for which it was established were (1) to work out the natural history of Rugby; (2) to keep an annual register of all facts connected with natural history observed there; (3) to assist in the formation of a museum for reference; (4) to hold meetings for the reading and discussion of papers on scientific subjects. The report just issued by the Society shows that most of the original objects were faithfully carried out during 1893. The members of the botanical section have worked well, and, thanks to their exertions, have prepared a useful list of Rugby mosses. In the entomological section, also, good work was done. The report includes an observation list of Rugby Lepidoptera, containing 293 species, of which six are new to the district, and Mr. F. D. Morice contributes some additions to his list of Hymenoptera. Up to December of last year he had found upwards of 140 species of Aculeates in the Rugby neighbourhood. Other sections of the Society concern themselves with zoology, archæology, geology, photography, and meteorology. The report not only contains the proceedings of these sections, but also a brief statement of the observations made at the Rugby Observatory, and several papers read at the meetings. We have also received the last report of the Epsom College Natural History Society. Such societies deserve the greatest encouragement, and the only matter for regret is that their work is not found interesting to a larger proportion of the schools to which they belong, instead of being left to a few enthusiasts.

A DETAILED account of his investigations concerning the gaseous fluorides of the simpler organic radicles is contributed by M. Meslans to the March number of the *Annales de Chimie et de Physique*. The fluorides of methyl and ethyl have already been fully described by M. Moissan and other workers, and the fluorides now described are those of the radicles propyl, isopropyl, allyl, and acetyl, together with the interesting analogue of chloroform, fluoroform. Propyl fluoride may be obtained by reacting with the corresponding chloride, bromide, or iodide upon anhydrous fluoride of silver. The iodide is most convenient as it reacts at the ordinary temperature, while propyl bromide requires heating to the neighbourhood of 100°, and the chloride to a still higher temperature. The reaction between propyl iodide and silver fluoride may be best carried out in a copper tube immersed in tepid water. The propyl iodide is admitted to the tube already containing the silver fluoride from a dropping funnel, and the gaseous product of the reaction passes upwards through a leaden condensing worm, cooled by iced water, and subsequently through three U-tubes containing fragments of silver fluoride, and finally through a delivery tube to the mercury trough over which the gas is to be collected. The reaction does not simply result in the formation of propyl fluoride and silver iodide. A third substance is produced, a red solid substance which is found to be an iodo-fluoride of silver of the composition Ag_2FI. The amounts of propyl fluoride and of the latter substance obtained correspond to the equation

$$C_3H_7I + 2AgF = C_3H_7F + Ag_2FI.$$

Propyl fluoride is a colourless gas possessing an odour similar to that of the analogous chloride. It burns with a brilliantly luminous flame forming aqueous vapour, carbon dioxide, and hydrofluoric acid. It liquefies at – 3° at the ordinary pressure to a colourless mobile liquid which is without action upon glass. The difference of boiling point between this liquid and propyl chloride (+ 45°) is 48°, about the same as that between ethyl fluoride and chloride, and almost twice as great as that between the chlorides and bromides of the two radicles. The gas is decomposed by melted sodium, with sudden and brilliant incandescence accompanied by deposition of carbon. It is soluble in water to the extent of one and a half times the volume of the latter. Isopropyl fluoride and allyl fluoride are prepared in a similar manner from the corresponding iodides. They are both gaseous substances capable of condensation to liquids by reduction of temperature or augmentation of pressure. A mixture of allyl-fluoride with four times its volume of oxygen explodes with great violence under the agency of an electric spark, or when brought in contact with a flame.

Fluoroform, CHF$_3$, has been prepared in the pure state by M. Meslans only after repeated unsuccessful attempts. When free fluorine from the platinum delivery tube of the electrolysis apparatus is allowed to escape into chloroform an energetic reaction occurs, chlorine is liberated, and in a few moments an explosion is produced, with copious formation of carbon tetrafluoride and fluoroform. If the fluorine is caused to enter a vessel containing air charged with vapour of chloroform an immediate explosion is produced. When finely-powdered silver fluoride and iodoform are mixed a vigorous reaction also occurs, usually with incandescence, and the fluoroform produced is contaminated with other gaseous products. The reaction may be modified, however, by adding chloroform and cooling with ice, and the gas may be purified from chloroform by passing through alcoholic potash, which is without action upon fluoroform, from carbonic oxide, which is usually present in small quantity, by means of a solution of cuprous chloride in hydrochloric acid, followed by desiccation over fused potash, and finally from last traces of impurities by passage over silver fluoride heated to 150°. The gas thus treated is pure fluoroform, a gas which liquefies at 0° under a pressure of twenty atmospheres. It is incombustible, but imparts a bluish-green colour to a Bunsen flame when injected into it. It is insoluble in water, and possesses an odour similar to but feebler than that of fluoroform. The action of free fluorine upon it is interesting. A flame is produced at the end of the platinum tube delivering fluorine, and the one atom of hydrogen contained in the fluoroform is extracted and converted into hydrofluoric acid without any deposition of carbon, the latter element being at the same time entirely converted to the gaseous tetra-fluoride.

The additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mr. W. Chrystal; a Squirrel Monkey (*Chrysothrix sciurea*) from Brazil, presented by Mrs. E. M. Parkinson; two —— Bears (*Ursus* sp. inc.) from the Caucasus Mountains, presented by Mr. Arnold Pike; a Striped Hyæna (*Hyæna striata*) from North-west Africa, presented by Señor Don. D. M. Macleod; a Kinkajou (*Cercoleptes caudivolvulus*) from South America, presented by Mr. A. Murray; a Hairy Armadillo (*Dasypus villosus*); a Common Teguixin (*Tupinambis teguixin*) from h America, presented by Captain W. Clift; an American Turkey (*Meleagris gallo-pavo*) from North America, presented by Mr. Blayney Percival; two Pink-footed Geese (*Anser brachyrhynchus*), British, presented by Colonel W. H. Feilden; a Greek Tortoise (*Testudo græca*), European, presented by Mr. George Hollis; a Green Tree Frog (*Hyla arborea*), European, presented by Mr. Thomas Plowman; two —— Pittas (*Pitta* sp. inc.) from Australia, purchased.

OUR ASTRONOMICAL COLUMN.

The Reckoning of the Astronomical Day.—The Canadian Institute, in co-operation with the Astronomical and Physical Society of Toronto, have for some time had under consideration the subject of astronomical time reckoning, and last May the joint committee appointed sent out a circular-letter for the purpose of obtaining the views of scientific men interested in the matter. Answers were invited to the following question:

"Is it desirable, all interests considered, that on and after the first day of January 1901, the Astronomical Day should everywhere begin at mean midnight?" At the present time, as all astronomers know, the astronomical day is reckoned from mean noon to mean noon, and is 12 hours behind the civil day. Hence, if the proposed change were adopted, the only difference between astronomical and civil times would be that the former would have a twenty-four hour, and the latter a twelve-hour notation. The astronomical day would therefore be identical with the universal day, reckoning from 0 to 24 hours, and commencing at midnight. From the fourth annual report of the Toronto Physical and Astronomical Society, it appears that 170 answers to the question had been received. Of these, 107 were in the affirmative, and 63 in the negative. Twenty-one astronomers in the British Islands thought the change desirable, and four were against it. In the United States, twenty-eight astronomers favoured the departure from present custom, and ten opposed it. German astronomers are strongly against the suggested change, as many as thirty-one replying in the negative, while only seven sent affirmative answers. In fact, Germany was the only country which furnished a majority of negative answers. Most of the replies received were simply in the affirmative or in the negative, but many were qualified in some respect. All the categorical replies were in English, and of the answers received from foreign countries, with notes written in English, five were from Germany, four from Italy, four from Austria, and one each from Russia, France, Norway, Holland, and Colombia. As Miss A. A. Gray, who compiled the answers, points out, this shows that the English language is rapidly becoming an international medium for the communication of scientific information.

The Height of an Aurora.—Among the many interesting communications to the Astronomical and Physical Society of Toronto during the year 1893, and contained in the volume of the *Transactions* just received, is one by Mr. Arthur Harvey, on the widely observed aurora of July 15. During the display, an arch of auroral light rolled up out of the north, and passed the zenith of Toronto, spanning the sky from east to west. Its width was fairly uniform, being from 5° to 7°. After lasting for several minutes, its continuity broke up in the east, it wavered at the zenith, and soon vanished. Fortunately, Mr. G. E. Lumsden saw the arch break up and vanish in the same manner. He was at Bala, 110 miles north of Toronto, and saw the arch projected across the constellation Aquilla, at a point some five degrees north of the celestial equator, or 40° south of the zenith. At Toronto, Mr. Harvey saw the same arch at the same time lying across Lyra, at a point about 10° south of the zenith. From these observations the perpendicular height of the arch was found to be 166 miles, and its breadth about 15 miles. If the arch maintained an equal height above the earth, its ends were 1150 miles away, so that the magnificent sight was presented of an auroral belt in the sky with 2300 miles between its two extremities.

An Annular Eclipse of the Sun.—There will be an annular eclipse of the sun to-morrow, which, however, will not be visible in this country. It will be seen as a partial eclipse in Norway and Sweden, Eastern Europe, and Asia; and as a central one along a line starting from a point in the Indian Ocean, crossing India a little north of Madras, passing through Calcutta, Upper Burmah, China, and Eastern Siberia. The central eclipse begins at 2.24 a.m. Greenwich mean time, in longitude 53° 48′ east, latitude 6° 51′ north, and ends at 5.23 a.m. in longitude 157° 38′ west, latitude 62° 48′ north. The greatest duration of annularity will be about 32 seconds. An eclipse of this kind excites but little scientific interest, the chief observations of value being those of the times of the four contacts.